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SANITIZED VERSION OF SURVEY OF UCC-ND WASTES (1/4/80)

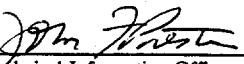
(SANITIZED VERSION OF CRD DOCUMENT # K/ESH-11)

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

April 23, 1996

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7314
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

This document has been approved for release
to the public by:


S. G. Thornton
Technical Information Officer
Oak Ridge K-25 Site

5/13/96
Date

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SURVEY OF UCC-ND WASTES

Ref: Ltr., AS Quist to ME
Mitchell, 2/19/93,
"Classification (U)." CNSI.
Document (U)." CNSI.
ASQ's ltr indicates that K-25
CRD info revealed Office determined
pages 10 and 13; and Y-12
Classification Office determined
CRD info revealed in List III,
page 14 and in List I, page 1.

H. Abee - UCC-ND
C. Conrad - PGDP
M. E. Mitchell - ORGDP
J. M. Napier - Y-12
T. W. Oakes - ORNL
M. Sanders - Y-12

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SUMMARY

A detailed survey of all wastes generated by the four UCC-ND plants has been conducted. The primary objective of this effort was to provide sufficient information to develop an overall plan for disposing of UCC-ND wastes, with special emphasis being placed on categorizing the wastes according to type of disposal required; the ultimate goal being to provide centralized treatment and disposal facilities where feasible.

The survey resulted in three separate lists of wastes. The first list consists of those wastes that are currently receiving adequate treatment and disposal. List II includes those wastes for which adequate treatment and/or disposal facilities have been funded and thus, will be operative in the near future. List III, which is the primary product of the survey, includes all wastes for which adequate treatment and/or disposal is not yet funded, even though budget submissions may have been made and some engineering work may have been initiated.

In general, the effort identified approximately 150 waste streams for which adequate treatment and/or disposal has not yet been funded (List III). It is currently anticipated that about 55 of these wastes could be adequately disposed of in a centralized incinerator(s) and that another 55 could be disposed of in appropriate centralized burial grounds. It should be noted that the wide variety of materials that could be incinerated will present costly design and operational concerns. Likewise, the many inorganic solid wastes considered suitable for burial will also create design and operational concerns that must be resolved in accordance with proposed regulations.

Each of the four plants reported airborne and liquid effluents that must receive additional treatment. However, because of their site-specific nature, some of these must be treated individually, and thus were not considered candidates for centralized treatment but investigation of common solutions should be considered.

A generalized listing of those wastes considered candidates for centralized treatment and disposal is presented in Table 1. The detailed listing of all wastes generated at the four UCC-ND facilities is attached as Appendix A.

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DISCUSSION

In September of 1979, a committee of knowledgeable individuals was established to make a survey of all wastes generated by the four UCC-ND installations and to prepare a categorized listing of all UCC-ND waste streams. The members of the committee included:

- H. H. Abee of the UCC-ND Office of Health, Safety, and Environmental Affairs,
- M. C. Conrad of the Paducah Gaseous Diffusion Plant Environmental Control Department,
- M. E. Mitchell of the Oak Ridge Gaseous Diffusion Plant Environmental Management Group,
- J. M. Napier of the Y-12 Plant Development Division,
- T. W. Oakes, the Oak Ridge National Laboratory Environmental Coordinator,
- M. Sanders, the Y-12 Plant Environmental Coordinator.

The first order of business of the Committee was to establish a weekly meeting schedule and to determine the format for reporting the information that would be gathered. After considerable discussion, the decision was made to present the information in the form of three separate lists, with each list being subdivided into eight categories. List I includes those wastes which were not considered to be disposal problems or for which current treatment and ~~for~~ disposal methods are considered adequate, based on current regulation interpretations. List II includes those wastes for which funding has been approved to construct required treatment/disposal facilities. List III includes those wastes, which in the Committee's judgment constitute existing and/or potential problems requiring correction and for which funding has not been approved even though many have been included in budget submissions.

Each installation representative tabulated his installation's wastes into the three lists by categories and distributed the lists to the other committee members for review. At subsequent meetings of the committee, each waste was reviewed and discussed. Defining the list on which wastes ultimately should be placed was not a major problem in most cases. Where the listing of a waste was questionable, the majority opinion of the committee was used as the basis for deciding the list and category into which the waste would be placed.

The categorization of wastes for each list is intended to provide some basis for evaluating potential common disposal techniques. Of particular interest and concern are listings of wastes that could conceivably be incinerated and/or buried in facilities shared by all four UCC-ND installations.

Considerable discussion was required to arrive at definitions for placing wastes into categories on List III. For example, it was agreed that waste oils contaminated with uranium and/or less than 500 ppm polychlorinated biphenyls (PCB's) should be placed in Category A (Oils and Coolants). Contaminated oils having more than 500 ppm PCB's would be listed in Category B (Toxic/Hazardous Liquids).

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The general format of each list is presented in Table 2, and a brief description of the individual categories is as follows:

1. Category A (Oils and Coolants) includes hydrocarbon oils, synthetic oils, and machine coolants, all of which may be contaminated with radionuclides and/or PCB's at a level of less than 500 ppm.
2. Category B (Toxic/Hazardous Liquids) contains separate listings for organics and inorganics because ultimate treatment methods would probably be different; and includes either regulated substances or substances (i.e., cleaning solvents, laboratory wastes) which could result in potential human health or environmental impacts if released uncontrolled or without treatment.
3. Category C (Toxic/Hazardous Solids) contains separate listings for organics and inorganics defined similarly to Category B, and includes such wastes as reactive metals, laboratory clean-up wastes, and PCB clean-up wastes.
4. Category D (Metalic Sludges) includes residues from airborne effluent scrubbers, liquid effluent treatment systems, and bottom sediments from holding ponds.
5. Category E (Radioactive Wastes) is subdivided into liquids and solids and includes both low level and intermediate level wastes; however, wastes containing only trace quantities of radioactive materials considered to be below the level of concern for exposure of the general public were listed in other appropriate categories.
6. Category F (Airborne Effluents) includes all major effluents to the atmosphere, including those containing regulated organic vapors and radionuclides.
7. Category G (Liquid Effluents) includes process wastes, holding pond effluents, coal pile runoff, and surface runoff.
8. Category H (Non-Hazardous Wastes) is a listing of liquids and solids that do not pose a significant environmental impact or violate any Federal, State, or local regulation.

During the preparation of List III, the committee did not attempt to rank each category by priority. However, the committee feels that Category A (Oils and Coolants), Category B (Toxic/Hazardous Liquids), and Category C (Toxic/Hazardous Solids) represent disposal problems needing immediate attention. It should be noted that all items on List III represent waste disposal problems which should not be ignored.

The complete listing of all UCC-ND wastes is attached as Appendix A. As can be noted from this listing, information is also provided relative to the activity producing the waste, waste composition, generation rates, current treatment methods, and current methods of disposal. Where deemed useful, additional comments, including recommended treatment alternatives, are also included.

In an attempt to summarize some of the more pertinent facts presented in the complete listing, several condensed tables have been prepared. Table 3 lists the total quantities of wastes included in each of the three lists. Table 4 provides a further breakdown of the same information by presenting the total quantities of wastes for each category as well as for each of the three lists.

Waste quantities for each category are presented for each plant in Tables 5, 6, 7, and 8 respectively. In reviewing all tables in this report, special note should be given to the wastes presented in List III inasmuch as they do not now receive adequate treatment and/or disposal, nor are there plans for such treatment/disposal in the near future.

As mentioned previously, one of the primary objectives of this study was to determine the feasibility of centralized treatment and/or disposal for similar wastes generated by the UCC-ND facilities. After reviewing the various tables, it is apparent that certain categories of wastes do lend themselves to similar, if not identical, treatment. For example, Category A (oils and coolants), Category B.a. (organic liquids), and Category C.a. (organic solids) contain wastes that could be disposed of through incineration. As seen in Table 9, the four plants currently generate about 500,000 gallons of liquid organic wastes and about 6,100 tons of solid organic wastes that do not now receive adequate treatment and could be incinerated. It should be noted that the design of a single incinerator to handle this wide variety of wastes would be extremely difficult, and could result in significant safety problems. Therefore, the disposal of these particular wastes might involve more than one incinerator.

A centralized burial ground(s) could handle wastes from all of the plants. For example, over 30,000 tons of inorganic hazardous solid wastes, 1,500 tons of metallic sludges, and about 25,000 tons of low-level radioactive wastes could be buried in a centralized, specially-designed burial ground(s).

Non-hazardous wastes, including chemicals and routine land-fill scrap such as waste paper, wood, rags, food scraps, etc., could also be buried in a centralized burial area. All burial areas must meet DOE, EPA, and state criteria.

Several of the wastes generated by the individual plants are, for one reason or another, not suitable to centralized treatment. Airborne effluents, which all facilities discharge, are not suited to collection and transportation. However, some of the effluents, such as organic vapors from degreasing operations, might be treated by a common engineered solutions.

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CONCLUSIONS

The four UCC-ND Installations generate significant quantities of similar wastes that could be treated and/or disposed of in common, centralized facilities. Based on preliminary analysis of these wastes, the two promising means of disposal are a centralized incinerator system(s) and a centralized burial ground(s).

While the Paducah Plant was included in this study, a cost-benefit analysis of transporting wastes to Oak Ridge for treatment and/or disposal should be conducted before any firm decision is made regarding their inclusion in a centralized system.

RECOMMENDATIONS

Based on this survey analysis, the Committee recommends that:

1. A centralized system(s) be installed for the incineration of oils, organic liquids, and organic solids.
2. Centralized burial ground(s) be installed for the disposal of hazardous solid wastes.
3. Commercial disposal firms be utilized for disposal of wastes where applicable on a cost effective basis.
4. Future projects be reviewed and designed to minimize the generation of wastes which must be disposed.

*Attachments 3 -- List I
List II
List III*

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TABLE 1

UCC-ND Wastes That Are Potential
Candidates for Centralized Treatment

1. Incineration
 - A. Organic Liquids - 508,000 gal/yr.
 - B. Organic Solids - 6,100 tons/yr.
2. Nonradioactive Burial
 - A. Inorganic Solids - 30,000 tons/yr.
 - B. Metallic Sludges - 1,550 tons/yr.
3. Radioactive Burial
 - A. Radioactive Solids - 25,000 tons/yr.

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TABLE 2
General Categories For UCC-ND Wastes

- A. Oils
- B. Toxic/Hazardous Liquids
 - 1. Organics
 - 2. Inorganics
- C. Toxic/Hazardous Solids
 - 1. Organics
 - 2. Inorganics
- D. Metallic Sludges
- E. Radioactive Wastes
 - 1. Liquids
 - 2. Solids
- F. Airborne Effluents
- G. Liquid Effluents
- H. Non-hazardous Wastes
 - 1. Liquids
 - 2. Solids

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TABLE 3

Total Quantities Of Wastes¹
Generated By UCC-ND Facilities

	<u>Number of Wastes</u>	<u>Amounts of Wastes</u>	
List #1	98	Liquids - 1.3×10^9 gal/yr. Solids - 119,000 ton/yr.	Adequate ^T
List #2	49	Liquids - 886,000 gal/yr. Solids - 20,000 tons/yr.	Adequate ^T Faster
List #3	147	Liquids - $> 7 \times 10^9$ gal/yr. Solids - 63,000 tons/yr.	No ^A T

¹Does not include Airborne Effluents

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TABLE 4

Four Plant Summary of Categories of Wastes

	List 1		List 2		List 3	
	No. of Wastes	Amts.	No. of Wastes	Amts.	No. of Wastes	Amts.
A. Oils - Coolants (gal/yr.)	4	73,000	1	*	12	189,000
B. Toxic/Hazardous Liquids Organics (gal/yr.)	4	1.2×10^6	0	0	28	310,000
Inorganics (gal/yr.)	3	60,000	32	770,000	7	650,000
C. Toxic/Hazardous Solids Organics (tons/yr.)	8	193	2	10,000	14	6,000
Inorganics (tons/yr.)	6	2,500	0	0	12	30,100(1)
D. Metallic Sludges (tons/yr.)	2	> 500	0	0	17	1,550
E. RAD Wastes Liquids (gal/yr.)	2	46×10^6	1	100,000	2	1.8×10^6 (2)
Solids (tons/yr.)	1	108	1	3,000	21	25,000(3)
F. Airborne Effluents	17	*	6	*	11	*
G. Liquid Effluents (gal/yr.)	13	$> 1.2 \times 10^9$	3	56,000	21	$> 7 \times 10^9$
H. Non-hazardous Wastes Liquids (gal/yr.)	4	750,000	0	0	1	4,000
Solids (tons/yr.)	34	116,000	2	7,000	1	9
Total	98		49		147	

(1) Includes 30,000 tons of solids from ORGDP settling ponds which will be 1 time only.
Annual generation rates entering the ponds were not estimated.

(2) Includes decontamination rinse solutions at PGDP.

(3) Includes 20,000 tons of stored material which will be 1 time only.

*Quantity undetermined.

TABLE 5

Amounts of Y-12 Wastes

	<u>List 1</u>	<u>List 2</u>	<u>List 3</u>
A. Oils, Coolants (gal/yr.)	20,000	-	90,000
B. Toxic/Hazardous Liquids			
Organics (gal/yr.)	1,200,000	0	39,000(1,2)
Inorganics (gal/yr.)	60,000	770,000	600,000(3)
C. Toxic/Hazardous Solids			
Organics (tons/yr.)	< .01	0	> 6,000(4)
Inorganics (tons/yr.)	5	0	> 36
D. Metallic Sludges (tons/yr.)	-	0	> 250
E. RAD Wastes			
Liquids (gal/yr.)	0	0	-
Solids (tons/yr.)	0	0	> 1,724
F. Airborne Effluents	0.3 nano Ci/yr.	0	> 670 tons/yr.
G. Liquid Effluents (gal/yr.)	0	0	> 2 x 10 ⁹ (5)
H. Non-hazardous Wastes			
Liquids (gal/yr.)	750,000	0	0
Solids (tons/yr.)	7,176	0	0

(1) Does not include Poplar or Bear Creeks.

(2) Assumed densities of: 2 tons/yd.; 8.33 lbs/gal.; and 75 lbs/ft³.

(3) Denitrification wastes. Does not include liquid in S-3 ponds.

(4) Includes > 6,000 tons of PCB - soil which will occur 1 time.

(5) Includes 5×10^6 gallons/yr. of laundry wastes, total flow in Poplar Creek (2×10^9 gallon/yr.) and Bear Creek.

TABLE 6

Amounts of ORNL Wastes

	<u>List 1</u>	<u>List 2</u>	<u>List 3</u>
A. Oils, Coolants (gal/yr.)	35,100	0	8,600
B. Toxic/Hazardous Liquids			
Organics (gal/yr.)	0	0	225,000(2,3)
Inorganics (gal/yr.)	0	0	11,000
C. Toxic/Hazardous Solids			
Organics (tons/yr.)	2.6	10,000	75(6)
Inorganics (tons/yr.)	310(1,5)	0	41(4)
D. Metallic Sludges (tons/yr.)	0	0	0
E. RAD Wastes			
Liquids (gal/yr.)	46×10^6	100,000	0
Solids (tons/yr.)	108	3,000(1)	579(1)
F. Airborne Effluents	343,000 CFM	0	-
G. Liquid Effluents (gal/yr.)	0.11×10^9	0	$> 5 \times 10^9(7)$
H. Non-hazardous Wastes			
Liquids (gal/yr.)	10	0	4,000
Solids (tons/yr.)	26,000(1)	0	9

(1) Assumed densities of 2 tons/cubic yard and 75 lbs. per cubic foot.

(2) Does not include 93×10^6 gal/yr. of sewage.

(3) Assumed density of 8.33 lbs per gallon.

(4) Does not include 22,192 gas cylinders/yr.

(5) Does not include 265 empty drums/yr.

(6) Does not include 21,500 tons/yr. of sewage sludge.

(7) Includes White Oak Creek and Melton Branch.

TABLE 7

Amounts of PGDP Wastes

	<u>List 1</u>	<u>List 2</u>	<u>List 3</u>
A. Oils, Coolants (gal/yr.)	12,000	0	8,100
B. Toxic/Hazardous Liquids			
Organics (gal/yr.)	0	0	11,000
Inorganics (gal/yr.)	0	0	36,000
C. Toxic/Hazardous Solids			
Organics (tons/yr.) ⁽¹⁾	0	0	6
Inorganics (tons/yr.) ⁽¹⁾	0	0	51
D. Metallic Sludges (tons/yr.) ⁽¹⁾	550	0	40
E. RAD Wastes			
Liquids (gal/yr.)	0	0	1.8×10^6 ⁽²⁾
Solids (tons/yr.)	0	0	3,000
F. Airborne Effluents	0	> 740 tons/yr.	< 740 tons/yr.
G. Liquid Effluents (gal/yr.)	0.18×10^9	0	$> 0.1 \times 10^9$
H. Non-hazardous Wastes			
Liquids (gal/yr.)	0	0	0
Solids (tons/yr.)	4,200	6,800	0

(1) Assumed densities of 2 tons per cubic yard; 8.33 lbs. per gallon; and 75 lbs. per cubic foot.

(2) Decontamination rinse solutions containing minute amounts of RAD materials.

TABLE 8

Amounts of ORGDP Wastes

	<u>List 1</u>	<u>List 2</u>	<u>List 3</u>
A. Oils, Coolants (gal/yr.)	6,000	0	82,000
B. Toxic/Hazardous Liquids			
Organics (gal/yr.)	440	0	44,000(1,5)
Inorganics (gal/yr.)	310	0	0
C. Toxic/Hazardous Solids			
Organics (tons/yr.)	190(1,3)	0	10(1)
Inorganics (tons/yr.)	2,200(1,4)	0	30,000(1)
D. Metallic Sludges (tons/yr.)	0	0	1,260(1)
E. RAD Wastes			
Liquids (gal/yr.)	0	0	0
Solids (tons/yr.)	0	0	20,000(2)
F. Airborne Effluents	> 16.2 tons/yr.	> 11 tons/yr.	164 tons/yr.
G. Liquid Effluents (gal/yr.)	1×10^9	56,000	0.17×10^9
H. Non-hazardous Wastes			
Liquids (gal/yr.)	200	0	0
Solids (tons/yr.)	79,000(1)	0	0

(1) Assumed densities of: 2 tons per cubic yard; 8.33 lbs. per gallon; and 75 lbs. per cubic foot.

(2) Does not include cylinders of UF₆ tails. Does include 20,000 tons of stored material.

(3) Does not include 2,000 drums sold to public each year.

(4) Does not include 1,000 drums sold to public each year.

(5) Includes 20,000 gallons of centrifuge wastes.

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TABLE 9

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Summary of Categories A, B, and C - List 3
Organics (Incineration Candidates)

<u>Plant</u>	<u>No. of Problems</u>	<u>Amounts of Wastes</u>	
Y-12	22	Liquids	129,000 gal/yr.
		Solids	> 6,000 tons/yr.
ORNL	10	Liquids	234,000 gal/yr.
		Solids	75 tons/yr.
PGDP	9	Liquids	19,000 gal/yr.
		Solids	51 tons/yr.
ORGDP	<u>14</u>	Liquids	126,000 gal/yr.
		Solids	<u>10 tons/yr.</u>
TOTAL	55	Liquids	508,000 gal/yr.
		Solids	> 6,100 tons/yr.

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DERIVATIVE *Ground 9. Direct*
CLASSIFER: ARVIN S. QUST
K-25 Site Classification Date: 2/19/93

APPENDIX A (U)

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FBI - WFO
The Director, Federal Bureau of Investigation
5. General Intelligence
1.3. Domestic Intelligence
1.3.1. Counterintelligence and Criminal Sections.

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Waste Treatment	Current Disposal	Comments
A. Oils, Coolants						
1. Y-12	Cars; Uncontaminated Equipment	Misc. clean oils	20,000 gal/yr.	None	Sold	
a. Oils						
2. ORNL	Labwide	Misc. clean oils	35,100 gal/yr.	Tested for PCB's	Sold to outside contractor	
a. Oils						
3. PGDP	Maintenance	Misc. Clean Oils	12,000 gal/yr.		Sold	
a. Oils						
4. ORGP	Routine Vehicle Maintenance	Clean lube	6,000 gal/yr.	Analyzed for U and Pb	Sold to Reclamation Firm	
a. Vehicle Oil						
B. Toxic/Hazardous Liquids						
1. Y-12					Terminate FY 1980	
a. Organics						
(1) Luxon	9204-4	Lux soap, Caustic	1,200,000 gal/yr.	None	S-3	

Derivative Chem & Audit
CLASSIFIER: ARVIN S. QUIST 7/19/93
K-26 Site Classification Officer

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
2. ORNL - None					
3. PGDP - None					
4. ORGDP					
a. Organics					
(1) Discarded organic chemicals	Development and Analytical Labs	Various organic chemicals	90 gal/yr.	Packaged in DOT-SPEC containers	Could be incinerated
(2) Waste pesticides	Algae, Vegetation, and insect control	Cutrine Plus, Pramital, Raid, Roundup	50 gal/yr.	Packaged in DOT-SPEC containers	Could be incinerated
(3) Excessed organic chemicals	Removal of chemicals from Stores	New, labeled organic chemicals in original containers.	300 gal/yr.	None	Sold through Property Sales
b. Inorganics					
(1) Discarded inorganic chemicals	Development and Analytical Labs	Various inorganic chemicals	110 gal/yr.	Packaged in DOT-SPEC containers	Sent to Commercial Disposal Facility
(2) Excessed inorganic chemicals	Removal of chemicals from Stores	New, labeled inorganic chemicals in original containers	200 gal/yr.	None	Sold through Property Sales

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
c. Toxic/Hazardous Solids						
1. Y-12						
a. Organics						
(1) Controlled Drugs	Hospital	Narcotics	< 0.01 tons/yr.	None	Sanitary Sewer	Incinerate
b. Inorganics						
(1) Asbestos	Equipment Removal	> 1% Asbestos	5 tons/yr.	Bag	Bury	Bury
2. ORNL						
a. Organics						
(1) Used organic chemical drums	Routine chemical usage	Various organic chemicals/meta 30 & 55 gal. drums	2.6 tons/yr.	None	Sold through K-25 Property Sales	
(2) Discarded PCB transformers & capacitors	Replacement of transformers & capacitors	Drained transformers & capacitors	0.001 tons/yr.	Oil is drained & packed in appropriate drums	Equipment is sent to K-25	
(3) Controlled drugs	Medical & Lab-wide (Research)	Narcotics	0.001 tons/yr.	None	Burned in furnace at Metals & Ceramics with DOE official & plant drug officer (W.O. Graves) present	

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(4) Pesticide containers	Blgds. & Grounds X-10	Metal 5-gal. cans	149 cans/yr.	Washed 3 times	Landfill	
a. Inorganics						One site should be used
(1) Asbestos (includes transite sheeting)	Labwide	Greater than 1% asbestos by weight	310 tons/yr.	Wetdown prior to removal	Burial in trench at SWSA #6	
(2) Inorganic chemical drums	Routine Chemical Use	30 & 55 gal. drums which held inorganic chemicals at one time	265 drums/yr.	None	Sold thru K-25 Property Sales	
3. PGDP						
a. Organics - None						
b. Inorganics						
(1) Asbestos	Asbestos Demolition	Greater than 1% Asbestos	Variable	Wetting prior to removal	Burial	
4. ORGDP						
a. Organics						
(1) Organic chemi- cal drums	Routine organic chemical usage	Various organic chemicals - metal drums	2000 drums/yr.	None	Sold through Property Sales	Some are deheaded and reused at K-25
(2) Discarded PCB transformers and capacitors	Replacement	PCB's in metal cases	188 tons/yr.	Packaged according to EPA specs.	Transferred to Commercial Disposal Facility	

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(3) Controlled drugs	Medical	Various drugs, usually in pill form	0.001 tons/yr.	None	Burned in Steam Plant	
b. Inorganics						Consolidated burial should be considered
(1) Asbestos	Renovation of insulating systems	Greater than 1% asbestos by weight	2,200 tons/yr.	Packaged in double bags	Burial in Y-12 Burial Ground	
(2) Discarded Batteries	Various battery users	Lead, sulfuric acid, plastic	1.1 tons/yr.	None	Sold through Property Sales	
(3) Inorganic chemical drums	Routine inorganic chemical usage	Various inorganic chemicals - metal drums	1000 drums/yr.	None	Sold through Property Sales	Some are deheaded and reused at K-25
D. Metallic Sludges						
1.	Y-12					
	a. Classified Waste					
2.	ORNL - None					
3.	PGDP					
	a. Chromium Sludges	RCW Blowdown Treatment (Utilities)	Heavy Metals	550 tons/yr.	Precipitation	C-616 Full Flow & Sludge Lagoon
4.	ORGDP - None					Ultimate Disposal or Recovery of Chromium will be Required

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M
List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
E. RAD Wastes						
1. Y-12 - None						
2. ORNL						
a. Liquids						
(1) ILW Radwastes	Labwide	All high level wastes other than transuranic wastes	1.24×10^6 gals/yr.	Evaporation	Condensate sent to process waste/concentrate sent to hydrofracture	
(2) Process Radwaste	Labwide	Liquid low-level waste	4.5×10^6 gals/yr.	Demineralization (evaporation of resins)	Condensate to W.O. Creek/concentrate to ILW system	
b. Solids						
(1) TRU Wastes	Labwide	Transurics	108 tons yr.	None	Storage at SHSA #5	
3. PGDP - None						
4. ORGDP - None						
F. Airborne Effluents						
1. Y-12						
a. Process Stacks	General Plant	Trace amounts of U	0.31 Ci/yr	Filter	To Atmosphere	

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
2. ORNL						
a. Main Stack	Behind 3025	Air, Iodine, inert gases, particulates	1.35 x 10 ⁵ cfm	Goes thru monitor- ed for Iodine, inert gases, particulates (other treatment occurs at source)	To Atmosphere	
b. HFIR Stack	Bldg. 7900	Mixed gases & particulates	43,000 cfm	Hepafiltration	To Atmosphere	
c. MSRE Stack (Molten Salt Reactor)	Bldg. 7503	Mixed gases & particulates	10,000 cfm	Hepafiltration	To Atmosphere	
d. Pilot Plant Stack	Bldg. 3019	Mixed gases & particulates	26,000 cfm	Hepafiltration	To Atmosphere	
e. High Radiation Level/Analytical Lab Stack	Bldg. 2026	Mixed gases & particulates	10,000 cfm	Hepafiltration	To Atmosphere	
f. Accelerator Stack	Bldg. 6000	Mixed gases & particulates	5,000 cfm	Hepafiltration	To Atmosphere	
g. Steam Plant Stack	Bldg. 2519	SO ₂ , NO _x , particulates	114,000 cfm			
h. Storage Tanks		Mixed Gases	Volume negligible			
i. Degreasers		Volatile organic compounds				

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CONCLUDING STATEMENT

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
j. Spray Booths						
		Volatile organic compounds				
3. PGDP						
a. Steam Plant Exhaust	C-600 Steam Plant	Particulates; SO ₂ ; NO _x	Part. - 8,500 lb/yr. SO ₂ - 100,000 lb/yr.	ESP; low sulfur coal	To Atmosphere	
b. Smelter Exhaust	C-746 Aluminum Smelters	Particulates	700 lb/yr.	None	To Atmosphere	
4. ORGDP						
a. Purge Cascade Exhaust	Purging of dif-fusion light gases	Gaseous fluorides, chlorides, uranium, technetium-99	Classified	NaF traps, Al ₂ O ₃ traps, KOH scrubber	To atmosphere	
b. K-1413 Development Facility Exhaust	Exhausting of gases from Development	Primarily gaseous Halogens and Halogenated particulates	Max. of 3.6 tons/yr.	ESP, KOH scrubber	To atmosphere	
c. K-1401 Stabilization Exhausts	Exhausting of Barrier treatment gases	Gaseous Fluorides	3.3 tons yr.	KOH scrubber	To atmosphere	
d. Toll Enrichment Exhausts	Venting of UF ₆ cylinders	Gaseous and particulate fluorides, Uranium	0.9 tons/yr.	Cold traps, Alumina traps	To atmosphere	

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List 1: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
e. Uranium Recovery Exhausts	Drying and calcining of uranium compounds	Particulate uranium compounds, oxides of nitrogen	1.8 tons/yr.	None	To atmosphere	
f. Diffusion Wet Air Exhausts	Evacuation of Diffusion Equipment	Gaseous and Particulate Fluorides, Uranium	Maximum of 6.6 tons/yr.	None	To atmosphere	
g. Liquid Effluents						
1. Y-12 - None						
2. ORNL	a. Cooling Towers Blowdown	5 Cooling Towers Water w/various solids, traces of biocide & corrosion inhibitor	114×10^6 gals/yr.	None	Discharged to W.O. Creek	
3. PGDP	a. Decontamination C-400 Wash Solutions C-400	Uranium, ^{99}Tc	65,000 gal/yr.	Precipitated	Diversion Ditch	
b. Coal Pile Run-Off	Surface Runoff from Coal Yard	Coal Fines, Silt, Iron, Sulfurous Acid	1.2×10^6 gal/yr.	Equalization, Neutralization, and Sedimentation	Pumped to C-616 Full Flow Lagoon	Not Current Problem, But Specific Regulations May Make Improved Treatment Necessary

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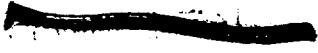
List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
c. RCW Blowdown	RCW System	Chromium, Zinc, Copper, TDS	1.82×10^6 gal/yr.	C-616 Treatment Facility	Solids to Sludge Lagoon - Liquid Overflow from C-616F	C-616F. Effluent Meet NPDES Limits
4. ORGDP						
a. Chromated RCW	Blowdown from RCW System	Chromium, zinc, copper, calcium, magnesium, sulfate, chloride	55×10^6 gal/yr.	Electrolytic reduction - precipitation	To K-901A Pond where solids are settled	K-901A effluent meets NPDES limits
b. Once through Cooling Water	Cooling water for air conditioners	Sanitary (chlorinated) water	9×10^8 gal/yr.	None	To Poplar Creek	New NPDES permits could require treatment
c. Small Cooling System Blowdown	Blowdown from small independent cooling phosphonates systems	Sanitary water, Poly-	2×10^7 gal/yr.	None	To Poplar Creek	Currently not specifically regulated under NPDES
d. Laboratory Rinse Water	Analytical and Development Labs	Rinse water with small quantities of chemicals	7×10^7 gal/yr.	Flow equalization in K-1007B Pond	To K-1007B Pond to Poplar Creek	K-1007B Pond effluent is regulated under NPDES
e. Heated (Condensate) Water	Condensate from UF ₆ Feed Facility	Heated (100°F) water	2.5×10^6 gal/yr.	None	To Poplar Creek	Discharge is regulated under NPDES
f. Uranium Recovery Wastes	Solvent Extraction of Uranium	HNO ₃ , Uranium, Aluminum, Tc-99	6,000 gal/yr.	Biodegradation	Shipped to Y-12 Bio-degradation Facility	

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
H. Non-Hazardous Wastes						
1. Y-12						
a. Liquids						
(1) X-Ray Film Wash Water	X-Ray Stations	Trace amounts of film developers	750,000 gal/yr.	None	Poplar Creek	Poplar Creek
(2) Blood	Hospital	Blood	< 100 gal/yr.	None	Sanitary Sewer	Incinerate
b. Solids						
(1) Mixed Chips	Machine Shop	Variety	350 tons/yr.	None	Bury	Separate, compact, sell
(2) non-contaminated Wastes	General Plant	47% paper, 17% plastics, etc.	4,300 tons/yr.	None	Bury	Separate, compact, sell, bury
(3) Used Tires	Cars	Rubber	20 tons/yr.	None	Sold	Sold
(4) Batteries	Cars	H ₂ SO ₄	9 tons/yr.	None	Sold	Sold
(5) Clean Metal Scrap	General Plant	Variety	1,400 tons/yr.	None	Sold	Sold
(6) Aluminum Chips	Machine Shops	A1	20 tons/yr.	None	Sold	Sell
(7) Excavation Spoil	General Plant	Soil	1,000 tons/yr.	None	Bury	Bury

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List I: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(8) Fly Ash	Steam Plant	Trace H ₂ SO ₄ , NaCl, CaSO ₄ , etc.	10 tons/yr.	None	Quarry	Filter, bury
(9) Carbon Dust	Carbon Shop	Pure carbon	67 tons/yr.	None	Sold	Sell
2. ORNL						
a. Liquids						
(1) Blood	Medical	Human Blood	10 gal/yr.	Autoclaved at 15 lbs. pressure for 30 minutes	Put in dumpster	
b. Solids						
(1) Scrap Metal	Labwide	Any old metal pieces, filings, shavings, etc.	420 ton/yr.	None	Sent to K-25 for sale	
(2) Batteries	Labwide		228/yr.	None	Sent to K-25 for sale	
(3) Used Vehicles	Labwide		50/yr.	None	Sent to K-25 for sale	
(4) Old tires	Labwide		916/yr.	None	Sent to K-25 for sale	
(5) Mixed paper	Labwide		36 ton/yr.	None	Sold to outside contractor	
(6) Continuous paper/computer cards	Labwide		248 ton/yr.	None	Sold to outside contractor	

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List 1: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(7) Cafeteria & Ofc. waste	Labwide		21,000 tons/yr.	Compaction	Y-12 Landfill	
(8) Construction material	Labwide		3,200 tons/yr.	None	Contractor's Dump	
3. PGDP						
a. Liquids - None						
b. Solids						Classified
(1) Induction Furnace Wastes	Nickel Recovery (Utilities Operations)	Refractory, Nickel, Slag, Filters, Floor-sweep, & Radioactivity	25 tons/yr.	None	C-746-F Classified Scrap Yard	
(2) Cooling Tower Fill	Cascade Operations/ Plant Maintenance	Asbestos, (High Efficiency Fill)	2.5 tons/yr.	None	C-746-K Sanitary Landfill	
(3) Transite Sheet ing	Cascade Operation/ Maintenance	Asbestos (40%)	5 tons/yr.	None	C-746-K Sanitary Landfill	
(4) Sewage Sludge	Sewage Treatment Plant (Utilities)	Organic Sludge, Trace Metals, Radioactivity	10 tons/yr.	Anaerobic Digestion	C-746-K and Landspreading	
(5) Sanitary Water Plant Sludge	Water Treatment (Utilities)	Mostly River Sediment, Lime, & Ferric Hydroxide	2,500 tons/yr.	Precipitation	C-611-V Lagoon Landspreading	
(6) Clean Scrap	Process Maintenance	Aluminum, Steel, Copper, Nickel	1,500 tons/yr.	None (Sold)	Clean Scrap Yard (Sold)	

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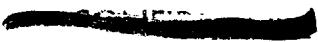
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List I: Waste Currently Receiving Adequate Treatment/Disposal

Maste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(7) Classified Metal & Plastic Scrap	Aluminum and Gold Recovery	Plastic & Metal (Large % Plastic)	100 tons/yr.	None	C-746-F Classified Scrap Yard	Classified
(8) Shredded Barrels (From Nickel Storage)	Nickel Recovery (Utilities Operations)	Steel Drums and Nickel Dust (Classified)	100 tons/yr.	None	C-746-F Classified Scrap Yard	Classified
(9) Demolition Waste	Subcontractor's Spoils	Dirt, Rock, Concrete, and Roofing		None	Contractor's Spoils Area	
4. ORGDP						
a. Liquids						
(1) Blood	Medical Laboratory	Human blood samples	1 gal/yr.	Autoclaved	Buried in Y-12 Sanitary Landfill	May be regulated under RCRA
(2) Discarded chemical solutions	Analytical and Development Labs	Nontoxic chemical solutions (Ca, Na, Mg, SO ₄ , PO ₄ , etc.)	200 gal/yr.	Flow equalization in K-1007B Pond	From Pond to Poplar Creek	K-1007B Pond is regulated under NPDES
b. Solids						
(1) Flyash	Combustion of Coal	Carbon, ash, sulfur, metals	3,000 tons/yr.	None	Buried in K-25 Contractor's Burial Ground	May be regulated under RCRA
(2) Fiberglass	Discarded Insulation	Fiberglass insulation	0.8 tons/yr.	None	Buried in K-25 Contractor's Burial Ground	

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List 1: Waste Currently Receiving Adequate Treatment/Disposal

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(3) Glass	Discarded Glass Containers	Broken glassware	19 tons/yr.	Rinsed	Buried in Separate Pit in K-25 Classified Burial Ground	
(4) Used Tires	Vehicle Maintenance	Rubber	38 tons/yr.	None	Sold through Property Sales	
(5) Clean Scrap Metal	Routine Plant Maintenance	Steel, aluminum, copper, mone, nickel, iron	1,125 tons/yr.	Surveyed to verify no radioactivity	Sold through Property Sales	
(6) Classified Rubbish	Wastes from Classified Operations	Waste paper, Barrier wastes, Centrifuge wastes	150 tons/yr.	Compacted	Buried in K-25 Classified Burial Ground	
(7) Unclassified Sanitary Wastes	Routine Plant Wastes	Paper, metal cans, food scraps, rags, etc.	37,500 tons/yr.	Compacted	Buried in Y-12 Sanitary Landfill	
(8) Demolition Wastes	Demolition of Plant Facilities	Wood, concrete, paper, spoil, dirt	37,500 tons/yr.	None	Buried in K-25 Contractor's Burial Ground	

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
A. Oils, Coolants						
1. Y-12						
a. ECM Liquids	ECM	30% NO ₃	Unknown	New Project N/A	New Project N/A	Filter, Recycle, Biodegrade
2. ORNL - None						
3. PGDP - None						
4. ORGDP - None						
B. Toxic/Hazardous Liquids						
1. Y-12						
a. Organic - None						
b. Inorganic						
(1) Nickel sulfamate solution	9401-2	80 g Ni/l	2,000 gal/yr.	S-3 Ponds	Chemical Treatment Facility	
(2) Watts nickel plating solution	9401-2	115 g Ni/l	1,000 gal/yr.	S-3 Ponds	Chemical Treatment Facility	
(3) Copper sulfate sulfuric acid solution	9401-2	68 ppm Cu	150 gal/yr.	S-3 Ponds	Chemical Treatment Facility	

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(4) Chromic acid anodize solution	9401-2	20 g Cr/l	360 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(5) Chrome plating	9401-2 solution	121 g Cr/l	500 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(6) Sump wastes	9401-2 (chromium contaminated)	2 to 900 ppm Cr	50,000 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(7) Sulfuric acid	9401-2	62% H ₂ SO ₄	12,000 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(8) Hydrochloric Acid	9401-2	24% HCl	24,000 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(9) Alkaline elec- tro-cleaner solution (proprietary)	9401-2	28 g Na/l	4,000 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(10) Alkaline cleaner	9401-2	8 g Na/l	2,300 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility

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List II: Waste Disposal Problems with Definite Funded Solutions

Maste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(11) Cyanide strip solution (NaCN-NaCN)	9401-2	33 g CN/l	6,200 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(12) Sulfamic acid solution	9201-5	No data	100 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(13) Nitric acid-- sodium dichromate solution	9401-2	17 g Cr/l	250 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(14) Chrome strip bath (NaOH-Na ₂ CO ₃)	9401-2	1.2 Cr/l	150 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(15) Chrome acid bright dip	9204-4	>10% Cr(NO ₃) ₃	300 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(16) Chrome acid solution	9737	>10% Cr(NO ₃) ₃	300 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(17) Nitric acid	9401-2	>10% HNO ₃	300 gal/yr.	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility
(18) Hydrofluoric- nitric acid	9401-2	>10% HF-HNO ₃	1,000 gal/yr. Chemical Treatment Facility	S-3 Ponds	Chemical Treatment Facility	Chemical Treatment Cent. Waste Treatment Facility

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(19)	Waste acids (HCl, HNO ₃ , H ₂ SO ₄)	>10% acid	1,700 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(20)	Acetic acid solution	>10% acid	250 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(21)	"Black oxide" bath (proprietary- NaOH, NaNO ₃ , NaNO ₂)	Conc. NaOH, etc.	500 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(22)	Salvage caustic	>10 NaOH	2,000 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(23)	Ferric chloride solution	>10% Fe(Cl) ₃	600 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(24)	Selenium-contaminated wastewater	Fe, Se, Ni	1,000 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(25)	Eastman fixer solution and developer	Ag	1,000 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility
(26)	Other plating solution (cadmium, copper, cyanide, etc.)	Conc. Wastes	300 gal/yr.		S-3 Ponds	Chemical Treatment Cent. Waste Treatment Facility

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(27) Beryllium wastewater	9202, 9808	>1 ppm Be	4,500 gal/yr.	S-3 Ponds		Chemical Treatment Cent. Waste Treatment Facility
(28) Be Mop Water	9201-5	>1 ppm Be	318,000 gal/yr.	S-3 Ponds		Chemical Treatment Cent. Waste Treatment Facility
(29) U contaminated Mop Water (depleted)	Process	>5 ppm U depleted	220,000 gal/yr.	S-3 Ponds		Chemical Treatment Cent. Waste Treatment Facility
(30) Pickling baths (acid)	Process	HNO ₃ , HCl, Depleted U	15,000 gal/yr.	S-3 Ponds		Chemical Treatment Cent. Waste Treatment Facility
(31) Waste Acids (misc.)	Labs	Mixed acids	200 gal/yr.	S-3 Ponds		Chemical Treatment Cent. Waste Treatment Facility
(32) HF Scrubber solution	9212, 9206	10% F	50,000 gal/yr.	S-3 Ponds		Chemical Treatment Cent. Waste Treatment Facility

2. ORNL - None
 3. PGDP - None
 4. ORGDP - None

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
C. Toxic/Hazardous Solids						
1.	Y-12 - None					
2.	ORNL					
a.	Organic					
	(1) Coal-Pile Runoff	Steam Plant	Leachate from coal pile	44 tons/yr.	Settlement in pond	Mixed with flyash
b.	Inorganic					
	(1) Flyash	Steam Plant	Small particles 6-ft after combustion of coal	10,000 tons/yr.	None	Burial
3.	PGDP - None					
4.	ORGDP - None					
D. Metallic Sludges						
1.	Y-12 - None					
2.	ORNL - None					
3.	PGDP - None					
4.	ORGDP - None					

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
E. Radioactive Wastes						
1.	Y-12 - None					
2.	ORNL					
a.	Liquids					
	(1) ILW Concentrate	ILW Radwaste System	Various radionuclides	100,000 gal/s/yr.	Mixed with cement	Hydrofracture Facility
b.	Solids					
	(1) Low Level Waste	Labwide	Various contaminated laboratory solids	3,000 tons/yr.	Compaction as required	Burial at SWSA #6
3.	PGDP - None					
4.	ORGDP - None					
F. Airborne Effluents						
1.	Y-12					
	a. HF Gas Scrubbers	9206, 9212	HF-Air	7,000 ft ³ /yr.	None	Air
2.	ORNL - None					

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
3. PGDP						
a. C-400 Pulverizer Exhaust	Chemical Operations UF ₄	0.04 tons/yr. of U	Filter	Atmosphere	Atmosphere	Upgraded Facilities are Being Provided by DOD Project
b. Trichloroethylene Degreasers	Chemical Operations, Degreasers Vapors	740 tons/yr.	Condenser	Atmosphere	Atmosphere	Cover is Being Installed to Reduce Emissions
c. C-310 Purge Vent Stack	Cascade Operations	Traces - Fluorides UF, ⁹⁹ Tc, Air	0.008 tons/yr.	Diffusion MgF ₂ Traps	Atmosphere	Airborne Effluent Project - Fy '80
4. ORGDP						
a. Diffusion Pilot Plant Exhaust	Purging of Pilot Plant Equipment	Gaseous Fluorides, Uranium	Max. of 1 ton/yr.	None	To Atmosphere	1980 Project for KOH Scrubber
b. Fluorine Plant Exhaust	Exhaust from Fluorine Manufacture	HF, F ₂	1 ton/yr.	None	To Atmosphere	Plans for shut-down of fluorine plant and purchase of F ₂
c. Steam Plant Emissions	Exhaust from Ash Handling System	Visible emissions of Ash (particulates)	Visible	Ash washer	To Atmosphere	1979 Project for new air washer/bag filters
6. Liquid Effluents						
1.	Y-12 - None					
2.	ORNL - None					

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List II: Waste Disposal Problems with Definite Funded Solutions

Haste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
3. PGDP	a. Oil and water	Surface runoff from oil use areas	100 gal/yr. of oil	None	N/A	Oil skimmers to be installed in 1979 and 1980
4. ORGAP	a. Uranium Recovery Wastes	HNO ₃ Condensate from Evaporators	HNO ₃ , Uranium, Tc-99	12,000 gal/yr.	Neutralization in K-1407A	To K-1407B Pond to K-1007 Pond to Poplar Creek
	b. RCW Softening Wastes	Softening of RCW Make-up Water	Calcium, Magnesium, Hydroxides, Carbonates caustic Hydrocarbon oil	24,000 gal/yr.	Settling in K-901A Pond	1980 Project for two new ponds with pH control
	c. Accidental Oil Releases	Oil Spills from Process Buildings	Hydrocarbon Oil	Max. of 20,000 gal/yr.	None	To Poplar Creek
H. Non-Hazardous						
	1. Y-12	None				
	2. ORNL	None				
	3. PGDP					
	a. Liquids	None				

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List II: Waste Disposal Problems with Definite Funded Solutions

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
b. Solids						
(1) Steam Plant Ash	Steam Plant Utilities Operations	Coal Ash	5,800 tons/yr.	None	C-746-K Sanitary Landfill	New Sanitary Landfill '80 Landfill
(2) Landfill Rubbish	General Plant Waste	Paper, Wood, Metal, Garbage	1,000 tons/yr.	None	C-746-K Sanitary Landfill	New Sanitary Landfill '80 Landfill
4. ORGDP	- None					

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1 List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
<u>A. Oils, Coolants</u>						
1. Y-12						
a. Waste Oil	Equipment	70% C, U, heavy metals PCB 5% Carbon	80,000 gal/yr. 10,000 gal/yr.	None	Oil field Bio-oxid.	Recycle incinerate Recycle, bio- oxid.
b. Machine Coolants	Metal Fab					
2. ORNL						
a. Oil contaminated with PCBs	Transformers	Oil in transformers on hand	8,000 gal/yr.	PCB testing	Stored at K-25	Incinerate
b. Radioactive Waste Oil	Labwide		600 gal/yr.	None	Stored at X-10	Treat/Incinerate
3. PGDP						
a. Waste Oil (Contaminated)	Process and Maintenance	Uranium and/or PCB Contaminated Oils	8,000 gal/yr.	None	Storage	Solutions Need to be Studied
b. Transformer Oil Filter Media	Power Operations	Paper, Oil	1 ton/yr.	None	C-746-K Sanitary Landfill	RCRA Burial 81 L.I.
4. ORGDP						
a. Radioactive Waste Oil w/o PCB (< 5 ppm)	Diffusion Equipment	Hydrocarbon oil, uranium	20,000 gal/yr.	Analyzed for PCB	Landfarmed at Y-12	Treat/Incinerate

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
b. Radioactive Waste Oil with PCB (5 < 50 ppm)	Hydraulic Systems & Machine Shops	Non-flammable oils, PCBs, mineral oils	9,000 gal/yr.	Analyzed for PCB	Stored in 55 gallon drums	Treat - Incinerate
c. Radioactive Waste Oil with PCB (50 < 500 ppm)	Hydraulic Systems & Transformers	Non-flammable oils, mineral oils, PCBs	1,000 gal/yr.	Analyzed for PCB	Stored in 55 gallon drums	Treat - Incinerate
d. Fissile Waste Oil (> 1% U-235)	Diffusion and Vacuum Pumps	Non-flammable oils, Uranium, PCBs > 5 ppm	6,000 gal/yr.	Analyzed for Uranium and PCB	Stored in 5 gallon buckets	Treat - Incinerate
e. Waste Cutting oils- Water soluble	Machining of Metals	Water-soluble cutting oils, uranium	6,000 gal/yr.	Analyzed for PCB and Uranium	Biodegradation in Y-12 Reactor	Treat - Incinerate
f. Waste Fullers' Earth with Oil	Filtering of Diffusion Equipment	Hydrocarbon oil, Fullers 40,000 gal/yr. Earth, Uranium Oil	Analyzed for PCB	Landfarmed at Y-12	Landfarmed at Y-12	Treat - Incinerate
B. Toxic/Hazardous Liquids						
1. Y-12	a. Organics					
	(1) Perc-Varso	U Process	50% perc 50% oil	1,200 gal/yr.	None	oil field
	(2) Misc. Liquids	Process	Perc, NaNO ₃ , NaCl	12,000 gal/yr.	None	S-3 Incinerate

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(3) Misc. Organics	U Process	Dibutyl carbitol, Tri-butyl phosphate	4,500 gal/yr.	None	oil fields	Incinerate
(4) Misc. Organics	Labs	Mixture	400 gal/yr.	None	oil fields	Incinerate
(5) Acetone	Labs	Acetone	175 gal/yr.	None	oil fields	Incinerate
(6) Acetic Acid	Metal Cleaning	Acid	250 gal/yr.	None	S-3	Bio-Ox id.
(7) ACN	Process	ACN-H ₂ O	2,000 gal/yr.	None	Store	Incinerate
(8) Paints and Solvent	Paint Shop	Flammable	None	None	Ground	Incinerate
(9) Oil in Pond	Leakage from burial ground	PCB-Oil-Water	12,000 gal/yr.	Store	None	Recycle, Incinerate
1254	PCB 1248,					
(10) Hazardous Organics	Labs	Varied	60 gal/yr.	None	Bear Creek	Incinerate
(11) Carcinogenic Wastes	Labs	Varied	Few bottles per year	None	Burial	Incinerate
(12) Conc. Photographic Solution	Photo Shops	Acetic trace Chromium	1,500 gal/yr.	None	S-3	Central Waste Treatment

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COBALT IIIA
 List III: Waste Disposal Problems for Which Funding is Not Yet Approved

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Waste	Activity Producing Waste	Coolant Disposal	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(13) Sludge from Biooxidation of Coolants		Organic Carbon	5,000 gal/yr.	Bury	Bury		Incinerate
(14) Organic Sludge Process from Central Waste Treatment		Organic Carbon	Unknown	Future	Future		Incinerate
b. Inorganics							
(1) S-3 Ponds	U Purification	HNO ₃ , U, etc.	6,000,000 gal Total	Neutralizing	In-situ Treatment		Phase Out
(2) Biodenitrification	U Purification	Al(OH) ₃ , CaCO ₃ , biomass	600,000 gal/yr.	Neutralizing in S-3	S-3	Bear Creek	Filter, Bio-oxidize
(3) Leakage from Burial Grounds	Burial Grounds	Unknown	Unknown	None		Treat Bear Creek	Treat at Source
(4) Mercury Contaminated Water	9201-4 (future problem)	Unknown	Unknown	None			
(5) Coal pile run-off	Steam Plant	Acids, heavy metals	Unknown	None	Poplar Creek	Retention basin, treat	
2. ORNL							
a. Organics							
(1) X-ray Developer	Labwide						CMTF Y-12
						Dumped in storm drain	

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(2) Photographic Wastes	Reproduction (L. Langford)	High COD, BOD, cyanates, pH=12.7 on some	14,074 gal/yr.	None	Being dumped down drain, some being collected	CWTF Y-12
(3) Chemicals	X-10 Biology Div. & Labwide	Various organic chemicals in solution	198,000 gal/yr.	None	Y-12	Incineration
(4) Biology Wastes	X-10 Biology Div.	Rinse from containers which hold toxic materials, liquid from animal handling	1,900 gal/yr.	None	Tank Farm	Incineration
b. Inorganics						
(1) Chemicals	X-10 Biology Div. & Labwide	Various inorganic chemicals in solution	10,500 gal/yr.	None	Y-12	CWTF Y-12
(2) Plating Shop	X-10 Wastes	Acids, cyanide compounds, Chromates	500 gals/yr.	None	Y-12	CWTF Y-12
3. PGDP						
a. Organic						
(1) Paint Wastes	Maintenance	Oil Based and Water Based Paint & Residues	380 gal/yr.	None	C-746-K Sanitary Landfill	RCRA Burial '80 L.I.
(2) Polychlorinated Biphenyls	Process Maintenance	PCB Liquids, Solids, and Capacitors	20 gal/yr.	Drummed	Offsite Disposal	Solution is Being Studied

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

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Waste	Activity Producing Waste	Hazardous Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(3) Nickel Stripper Solution	Nickel Stripping (Chemical Operations)	Contains 2000 mg/l Nickel, Ammonia & Metals	5,200 gal/yr.	None	Diversion Ditch	'81 L.I. Chemical Treatment
(4) Photographic Wastes	Photographic Processing	Ag, Organics	400 gal/yr.	Electrolytic Recovery	Sewage Treatment Plant	Electrolytic Recovery Removes Approximately 60% of Available Ag.
(5) Solvents	Degreasing	trichloroethylene, uranium	5,000 gal/yr.	None	Storage	
b. Inorganic						
(1) Gold Dissolver Solution (Filtrate)	Gold Recovery (Chemical Operations)	Mg/1 Ag(18), Cu(3), Pb(30), Zn(7)	36,000 gal/yr.	Precipitation	Diversion Ditch	Currently in Standby - '81 L.I. Sale of Untreated Solutions is Being Considered
4. ORGDP						
a. Organics						
(1) Centrifuge Manufacturing Wastes	Manufacture of Centrifuge Rotors	Classified	30,000 gal/yr.	None	Stored inside	Incinerator is planned for near future
(2) Waste Paints	Misc. Painting	Oil based and latex paints	100 gal/yr.	None	Landfarmed in K-25 Classified Burial Ground	Incineration or Commercial Disposal

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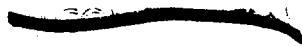
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1st 111: Waste Disposal Problems for Which Funding is Not Yet Approved

Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(3) Waste Organic Solvents	Degreasing, Paint Stripping	Trichloroethane, perchloroethylene, methylene chloride, acetone	6,000 gal/yr.	None	Landfarmed in K-25 Classified Burial Ground
(4) Liquid PCB Wastes	Maintenance of Electrical Equipment	> 500 ppm PCBs in solvents and oils	4,500 gal/yr.	Contained in DOT-spec. drums	Stored in PCB storage area
(5) Photographic Solutions	Photography & Reproduction	Cyanates, caustics, organics	3,000 gal/yr.	None	Discharged to K-1007B Pond
(6) X-Ray Developer	X-Ray equipment	Film developers and fixers	100 gal/yr.	None	Discharged to K-1007B and K-1407B Ponds
C. Toxic/Hazardous Solids					
1. Y-12	a. Organics	Trace Amounts	11 tons/yr.	None	RCRA Bury or incinerate
	(1) Waste Pesticides	Weed Control	>50 ppm PCB	>6,000 tons/yr.	Store
	(2) PCB - Soil	Process Leakage		None	RCRA Bury or incinerate
	(3) PCB Scrap	General Plant	Trace Amounts PCB	0.3 tons/yr.	None

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(4) Carcinogenic Wastes	Process Labs	Varied	0.1 tons/yr.	None	Store	RCRA Bury or incinerate
(5) Aerosol Cans	General Plant	Varied	1.5 tons/yr.	None	Burial	Incinerate
b. Inorganics						RCRA Oxidize
(1) Reactive Metals	Lithium Chem.	Li, Na	1.5 tons/yr.	None	Quarry	
(2) Re Contaminated Trash	Fabrication	Trace Amounts Be	35 tons/yr.	None	Bury	RCRA Compact and Bury
(3) Solids from Hg 9201-4 Strip Operations (future)	Hg on equipment	Unknown (large amounts.)	None	Store		Decontaminate and Sell
2. ORNL						
a. Organics						
(1) Biology Waste	Biology/Y-12	Cage cleanings, gloves waste food	26 tons/yr.	None	Burial Ground (X-10)	Incinerate
(2) Animal Tissue	Biology/Y-12	Various animal tissue infectious or non-infectious radioactive (^{31}I , ^{13}C , 3H , ^{32}P)	24 tons/yr.	Frozen	Burial Ground (X-10, SWSA #6)	Incinerate
(3) Chemicals	Biology/Y-12 Labwide	Various organic chemicals	3 tons/yr.	None	Y-12	Incinerate

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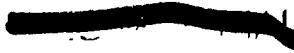
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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(4) Sewage Sludge	Labwide	Solids remaining after sewage settlement	22 tons/yr.	Settlement in lagoon	None	
b. Inorganics						
(1) Reactive Metals	Labwide	Na, Li, K, etc.	8 tons/yr.	Reaction w/water	Y-12 Quarry	
(2) Chemicals	X-10 Biology Div. & Labwide	Various inorganic chemicals	33 tons/yr.	None	Y-12	CNTF Y-12
(3) Gas Cinders	Labwide		22,129 cyl/yr.	Some have valves removed	Some are reused, some stored, treated ones go to K-25	Should have valves removed, be cut in half & sent to K-25 as scrap
(4) Aerosol Cans - See item II.2.a. in Table 1						
3. PGDP						
a. Organics						
(1) Aerosol Cans	Maintenance & General Use	Paint & Insecticide Residues	0.5 tons/yr.	None	C-746-K Sanitary Landfill '81 L.I.	
(2) Dispensary Nastes	Plant Hospital	Miscellaneous Dispensary Wastes	2.5 tons/yr.	Bagged	C-746-K Sanitary Landfill RCRA Burial/Incinerate - '81 L.I.	
(3) Used Pesticide Drums	Plant Maintenance	Drums With Pesticides Residues	2.5 tons/yr.	Rinse Before Disposal	Buried, Stored, or Reused	RCRA Burial/Incinerate - '81 L.I.

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(4) Cooling Tower Hood	Maintenance on Cooling Towers	Reduced With Trace Amounts Arsenic & Pentachlorophenol	0.5 tons/yr.	None	C-746-K Sanitary Landfill	RCRA Burial - '81 L.I.
b. Inorganics						
(2) Discarded Containers and Glassware	Plant Maintenance, Chemical Operations, and Laboratory	Glassware, Fiber Bags, Drums - Pesticides and Chemical Residues	1 ton/yr.	None	C-746-K Sanitary Landfill	RCRA Burial/Incinerate - '81 L.I.
(3) Aluminum Slag	Aluminum Smelters (Utilities Operations)	Aluminum Smelter Residue, Radioactivity	10 tons/yr.	None	C-746-F Classified Scrap Yard	Solution Being Studied
4. ORGDP						
a. Organics						
(1) Discarded Pesticide Containers	Pesticide Applications	Metal containers with traces of pesticides	4 tons/yr.	None	Buried in K-25 Classified Burial Ground	Commercial Disposal Facility or Incineration
(2) Used/Discarded Various aerosol Cans	Aerosol cans	Metal cans with propellents	6 tons/yr.	Compacted	Buried in K-25 Classified Burial Ground	Commercial Disposal Facility or Incineration

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
b. Inorganics						
(1) K-1407C Pond (existing)	Containment/storage of inorganic liquids	Metallic sludges, scrubber solutions, Ca(OH) ₂ , KF, KOH	20,000 tons	Stored	None	Plans for RCRA Disposal in 1981 Line Item
(2) K-1407B Pond (existing)	Settling of metals cleaning wastes	Metallic sludges, Ca(OH) ₂ , KOH, sulfates	10,000 tons	Stored	None	Plans for RCRA Disposal in 1981 Line Item
d. Metallic Sludges						
1. Y-12						
a. Solids from Central Treatment Facility	Future Plant	Heavy Metal Oxides	Unknown	Future Problem	Future Problem	RCRA Bury
b. ECM Solids	ECM	U Oxides, Heavy Metal Oxides	Unknown	Future Problem	Future Problem	RCRA Bury
c. Biodenitrification Solids	Bio System	Al(OH) ₃ , CaCO ₃ , heavy metals	250 tons/yr. (future problem)	Future Problem	Future Problem	RCRA Bury
d. Misc. Lab Materials	Labs	Variety	3.5 tons/yr.	Bury	Bury	RCRA Bury
2. ORNL						
a. None						

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
3. PGDP						RCRA Burial - '81 L.I.
a. Cleaning and Degreasing Sludges	Sludges from Cleaning Tanks	Chemical Cleaning Residues	0.3 tons/yr.	None	C-404	
b. Gold Recovery Sludge	Gold Dissolver Solution (Chemical Operations)	Heavy Metals	40 tons/yr.	Precipitated Drummed	C-404	RCRA Burial - '81 L.I. Sale of Gold Dissolver Solution to Vendor May Eliminate This Waste
4. ORGDP						RCRA Disposal Planned
a. Coalyard Solids	Surface runoff from coalyard	Coal fines, silt, iron, sulfate	30 tons/yr.	Settled in K-1700 Pond	Pond overflows to Poplar Creek	RCRA Disposal Planned
b. Nickel Plating Sludge	Neutralization of nickel plating solution	Sulfates, hydroxides, iron, nickel, calcium	48 tons/yr.	Settled in K-1407B Pond	Pond overflows to K-1700 pond to Poplar Creek	RCRA Disposal Planned
c. Metals Cleaning Sludge	Neutralization of metal's cleaning solution	Hydroxides, chlorides, nickel, iron, copper, aluminum	52 tons/yr.	Settled in K-1407B Pond	Pond overflows to K-1700 pond to Poplar Creek	RCRA Disposal Planned
d. Uranium Decontamination Sludge	Removal of uranium from process equip.	Insoluble uranium compounds (Uf ₅ , Uf ₄ , & Tc-99	15 tons/yr.	Settled in K-1407B Pond	Pond overflows to K-1700 pond to Poplar Creek	RCRA Disposal Planned
e. Steam Plant Water Treatment Sludges	Neutralization of ion exchange backwash	Calcium, magnesium, sulfates, hydroxides	487 tons/yr.	Settled in K-1407B Pond	Pond overflows to K-1700 Pond to Poplar Creek	RCRA Disposal Planned

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Maste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
f. Chromium Sludge	Electrolytic Reduction of Chromium in RCW	Iron-chromium hydroxide	52 tons/yr.	Settled in K-901A Pond	Pond overflows to Clinch River	RCRA Disposal Planned
g. Purge Cascade Scrubber Sludge	Scrubbing off Diffusion Purge gas	Potassium, uranium, Tc-99, fluorides, chlorides	49 tons/yr.	None	Deposited in K-1407C Basin	RCRA Disposal Planned
i. Fluorine Plant Sludge	Neutralization of fluorine cell cleaning solution	Potassium, iron, calcium, fluorides, hydroxides	1 ton/yr.	None	Deposited in K-1407C Basin	RCRA Disposal Planned
j. Activated Sewage Sludge	Discard of sewage sludge	Sewage sludge, silt, classified wastes	4 tons/yr.	None	Buried in K-25 classified burial ground	RCRA Disposal Planned
k. Stabilization Sludge	Scrubbing of Barrier treatment gas	Potassium, calcium, fluorides, chlorides	4 tons/yr.	None	Deposited in K-1407C Basin	RCRA Disposal Planned
E. RAD Wastes						
1. Y-12	a. Liquids	Depleted U	Unknown	Future Problem	Future Problem	To Central Waste Treatment Facility
	(1) Water from U Process Decontamination (Restoration Program)					

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
b. Solids						
(1) Air Filters	Process	Depleted U, Heavy Metal Oxides	30 tons/yr.	Bag	Bury	RCRA Compact/bury
(2) Contaminated Trash	Process (depleted U)	Trace U	900 tons/yr.	None	Bury	Compact and bury
(3) Contaminated Metal	Process (depleted U)	Trace U	264 tons/yr.	None	Storage	Compact, bury, or recycle
(4) Metals from Restoration Program	Process (depleted U)	Unknown (depleted U)	Unknown	Future Problem		Decontaminate, sell and bury
(5) Thorium Contaminated Wastes	Process	Th Unknown	170 tons/yr.	None	Bury	Compact and bury
(6) Solid U	Process (depleted U)	100% Metal		None	Bury	Bury

2. ORNL
a. Liquids - None

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
b. Solids						
(1) TRU contaminated metal equipment	Labwide	Dumpsters, drums, traps, pumps, etc.	12 tons/yr.	None	Retrievably stored or retrievably buried at SWSA #5	
(2) Metal equipment contaminated w/radioactivity other than TRU	Labwide	Dumpsters, charcoal filters, drums, traps, truck, pumps, etc.	567 tons/yr.	None	Buried at SWSA #6	
3. PGDP						
a. Liquids						
(1) Decontamination Rinse Solutions	C-400 Decontamination	Uranium, ⁹⁹ Tc, Trace TRU	1.8 x 10 ⁶ gal/yr.	None	Diversion Ditch	
b. Solids						
(1) Decontamination Precipitate	Metal Decontamination (Chemical Operations)	Heavy Metals and Radioactivity >10 Ci/kg TRU	1 ton/yr.	Precipitated Drummed	C-746 Whse., ORNL	Ship to ORNL
(2) Contaminated Scrap Metal	Process	Aluminum, Steel, Nickel - Uranium Contaminated	2,500 tons/yr.	None	Scrap Yard Storage	Solution is Being Studied

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
(3) UF4 Contaminated Drums	UF4 Pulverizer; Screener (Chemical Operations)	Drums Contaminated With UF4	270 tons/yr.	None	Storage Above Ground	Solution is Being Studied
(4) Reject UF4	UF4 Pulverizer; Screener (Chemical Operations)	UF4 (Depleted)	150 tons/yr.	Drummed	C-404 Burial	May Store in Future, Rather Than Burry
(5) Contaminated Alumina	Process	Alumina Contaminated With Uranium & Fluorides	15 tons/yr.	Drummed	C-404 Burial	Disposal Acceptable Under Current Regulations
(6) NaF Traps	Cascade Trapping Media	NaF, U, Tc, TRU	2 tons/yr.	None	Retrievable Storage	
(7) Decontamination-Precipitate	Metal Decontamination (Chemical Operations)	Heavy Metals and Radioactivity <1n Ci/kg TRU	50 tons/yr.	Precipitated, Drummed	C-404 Burial	Disposal Acceptable Under Current Regulations
(8) Contaminated Incinerator Ash	Chemical Operations	Contains Uranium (<0.5% U-235)	0.2 tons/yr.	Drummed	C-404 Burial	Disposal Acceptable Under Current Regulations
(9) Contaminated Sand Blast Material	Maintenance	Trace Uranium	5 tons/yr.	None	C-404 Burial	Disposal Acceptable Under Current Regulations

4. ORGDP

- a. Liquids - None

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
b. Solids						
(1) Waste alumina	UF ₆ chemical traps	Aluminum oxide, uranium	37 tons/yr.	Leached with HNO ₃ , to remove U	Buried in Y-12 radioactive waste burial ground	Consolidated disposal with other plant's waste
(2) Radioactive Rubbish	Routine cleaning operations	Floor sweepings, rags, paper, gloves, uranium, Tc-99	18 tons/yr.	None	Buried in Y-12 radioactive waste burial ground	Consolidated disposal with other plant's waste
(3) Radioactive scrap metal	Process equipment maintenance	Iron, steel, aluminum, copper, nickel, monel	20,000 tons by 1980	Surveyed to determine radioactivity	Stored near old K-25 powerhouse	Study underway
(4) Depleted UF ₆	Storage of UF ₆ tails	UF ₆ in steel cylinders		Stored in steel cylinders	None	Repackage
F. Airborne Effluents						
1. Y-12	Process	Vari ed	50 Cylinders per year	None	Air	Chemically Treat
a. Gas Cylinders						
b. SO ₂	Steam Plant Degreasers	SO ₂ Perc-Air	250 tons/yr.	None	Air	Chemically Treat
c. Perc Vapors (Degreasing Stations)					Air	Eliminate
d. Methyl Alcohol Vapors	Air Condition	Alcohol-Air	420 tons/yr.	None	Air	Seal System CONFIDENTIAL

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
2. ORNL						
a. Hoods	570 Hoods Labwide	Small quantities of organic solvent vapors acid & base fumes, hazardous gases, & other unquantified materials	Avg. face velocity 100 cfm	Some have hep-a-filters	Discharge into atmosphere	Trichloroethylene is Toxic Chemical which is Expected to be Regulated More Stringently in the Future
3. PGDP						
a. Trichloroethylene Emissions	Degreasers	Trichloroethylene Vapors	740 tons/yr.	Condenser	Atmosphere	
4. ORGDP						
a. Barrier Plant Emissions	Exhaust from Barrier Plant	Classified	Unknown	None	To Atmosphere	Study underway
b. Centrifuge Manufacturing Exhausts	Exhaust from centrifuge production	Classified	Unknown	None	To Atmosphere	Study underway
c. Coolant Losses	Leaks from coolant system	R-114, R-113, R-22, R-12	125 tons/yr.	None	To atmosphere	Study underway
d. K-1421 Incinerator	Combustion of radioactive solids	Particulates, SO ₂ , NO _x , uranium, etc. excessive particulates	1.9 tons/yr.	None	To atmosphere	Plans for new incinerator

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

M	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
e.	Solvent Vapors	Vaporization of solvents	Trichloroethane, per-chloroethyl lens, methylene chloride, acetone	37 tons/yr.	None	To atmosphere
6. Liquid Effluents						
1.	Y-12	General Plant	Trace U and heavy metals	2.2×10^9 gal/yr.	New Hope Pond	In Site Treatment
a.	Poplar Creek	General Plant	Trace Metals	0.9×10^9 gal/yr.	Bear Creek	In Site Treatment
b.	Bear Creek	General Plant	concentrated soap, laundry solutions, etc.	5×10^6 gal/yr. soaps	Poplar Creek	Biodegrade
c.	Laundry Paste					
2.	ORNL	Labwide	Treated sanitary water	9.3×10^7 gal/yr.	Sewage Treatment Plant	Discharge to W.O. Creek
a.	Sewage Treatment Plant					
b.	White Oak Creek	Labwide, Burial Ground Leakage	^{137}Cs , ^{106}Ru , ^{90}Sr , ^{96}Zr , ^{95}Nb , trans U alpha, ^{3}H	3.7×10^9 gal/yr.	None	None
c.	Melton Branch	Labwide, Burial Ground Leakage	Minute quantities of above listed nuclides	1×10^9 gal/yr.	None	None
d.	Laundry Waste	Laundry	Wastewater & dissolved detergent	8×10^5 gal/yr. 1000 ft. T.A.F.	Sent to Sewage Treatment Plant	None

No immediate plans - currently complies with state regulations

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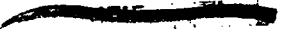
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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
3. PGDP						
a. Cooling Tower Windage	Liquid Losses From Cooling Towers	Cr+6	5.5×10^6 gal/yr.	None	To Land and Drainage Ditches Around Towers	Project to Collect Windage Losses Will probably be Funded
b. Incinerator Scrubber Solution	Chemical Operations	pH, Suspended Solids, Heavy Metals	Variable	None	East-West Ditch	Has not Presented Any Serious Problem Due to Small Volume. Project in 1981 L.I. Budget
c. Domestic Sewage	Plant Sewage	BOD ₅ , Suspended Solids	109×10^6 gal/yr.	C-615 Sewage Treatment Plant	Big Bayou Creek	Proposal to Change Limits and Outfall Point Has Been Made to State and EPA
4. ORGDP						
a. Nickel Plating Rinse Water	Rinsing of parts after plating	Sulfate, nickel, acidic	2.5×10^6 gal/yr.	Pit monitoring - flow equalization	To Poplar Creek	Plans for chemical treatment
b. Nickel Plating Wastes	Discard of used plating solution	H ₂ SO ₄ , Nickel, iron, aluminum, copper	20,000 gal/yr.	Neutralization in K-1407A	To K-1407B Pond to K-1700 Pond to Poplar Creek	Plans for better chemical treatment
c. Metals Cleaning Wastes	Discard of metals cleaning solutions	NaCl, NaOH, Nickel, iron, aluminum, copper	13×10^6 gal/yr.	Neutralization in K-1407A	To K-1407B Pond to K-1700 Pond to Poplar Creek	Plans for better chemical treatment
d. Steam Boiler Blowdown	Blowdown from steam boilers	Potassium, carbonate, sodium	26×10^6 gal/yr.	Flow equalization in K-1407B Pond	To K-1407B Pond to K-1700 Pond to Poplar Creek	Plans for chemical treatment

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

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Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
e. Steam Plant Make-up Water Waste	Backwash of ion exchange resin	H ₂ SO ₄ , Magnesium, calcium, iron	18 × 10 ⁶ gal/yr.	Neutralization in K-1501 Pit	To K-1407B Pond to K-1700 Pond to Poplar Creek	Plans for better chemical treatment
f. Uranium Decontamination Wastes	Decontamination of process equip.	Dilute HNO ₃ , Uranium, Ic-99	11 × 10 ⁶ gal/yr.	Settling in K-1407B Pond	Pond overflows to K-1700 Pond to Poplar Creek	Plans for chemical treatment
g. Coal Yard Runoff	Surface runoff from coal yard	Coalfines, silt, iron, sulfuric acid	Max. of 58 × 10 ⁶ gal/yr.	Flow/pH equalization in K-1700	To K-1700 Pond to Poplar Creek	Plans for chemical treatment
h. Domestic Sewage	Sewage from plant	NO ₂₅ , suspended solids, chlorine	2.3 × 10 ⁸ gal/yr.	Activated sludge facility	To Poplar Creek	Plans for tertiary filters/ozone treatment
i. Cooling Tower Drift and Windage	Liquid losses from cooling towers	Chromium, zinc, sulfates, chlorides, calcium, magnesium	8 × 10 ⁷ gal/yr.	None	To land around cooling towers	Plans for drift eliminators
j. Sanitary Water Treatment Waste	Solids removal from sanitary water	Aluminum sulfate, silt	18 × 10 ⁶ gal/yr.	Settling in K-1515 Pond	Pond overflows to Clinch River	Plans for better solids removal/collection
k. Accidental Oil Releases	Oil spills from switchyards	Mineral oils; low level PCBs (< 50 ppm)	Max. 15,000 gal/yr.	None	To Poplar Creek	Plans for in-line oil collection
ll. Non-Hazardous						
1. Y-12 - None						

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- 1. Y-12 - None

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List III: Waste Disposal Problems for Which Funding is Not Yet Approved

Waste	Activity Producing Waste	Waste Composition	Waste Quantity	Current Treatment	Current Disposal	Comments
2. ORNL						
a. Liquids						
(1) Chemicals	Labwide	Non-toxic chemical solutions	4,100 gal/yr.	None	Y-12	
b. Solids						
(1) Chemicals	Labwide	Non-toxic chemicals	9 tons/yr.	None	Y-12	
3. PGDP - None						
4. ORGDP - None						

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DISTRIBUTION

1. K-25 Site Records (RC)
2. ChemRisk/Shonka Research Associates
3. DOE Public Reading Room
4. S. G. Thornton (K-25 EMD)

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